

described^ and illustrative of some conclusions that may be drawn from the facts.

The influence of the oxidised iron wire, the transference of the inactive state from wire to wire, and the destruction of that state, are the facts I have principally verified; but they are so well described by Professor Schoenbein that I will not add a word to what he has said on these points,, but go at once to other results.

Iron wire, as M. Schoenbein has stated, when put *cdone* into strong nitric acid, either wholly or partly immersed, acquires the peculiar inactive state. This I find takes place best in a long narrow close vessel, such as a tube, rather than in a flat broad open one like a dish. When thus rendered quiescent by itself, it has the same properties and relations as that to which the power has been communicated from other wires.

If a piece of ordinary iron wire be plunged wholly or in part into nitric acid of about specific gravity 1.3 or 1.35, and after action has commenced it be touched by a piece of platina wire, also dipping into the acid, the action between the acid and the iron wire is instantly stopped. The immersed portion of the iron becomes quite bright, and *remains* so, and is in fact in the same state, and can be used in the same manner as the iron rendered inactive by the means already described. This protecting power of platina with respect to iron is very constant and distinct, and is the more striking as being an effect the very reverse of that which might have been anticipated prior to the knowledge of M. Schoenbein's results. It is equally exerted if the communication between it and the iron is not immediate, but made by other metals; as, for instance, the wire of a galvanometer; and if circumstances be favourable, a small surface of platina will reduce and nullify the action of the acid upon a large surface of iron.

This effect is the more striking if it be contrasted with that produced by zinc; for the latter metal, instead of protecting the iron, throws it into violent action with the nitric acid, and determines its quick and complete solution. The phenomena are well observed by putting the iron wire into nitric acid of the given strength, and touching it in the acid alternately by

pieces of platina and zinc: it becomes active or inactive accordingly; being preserved by association with the platina, and corroded by association with the zinc. So also, as M. Schoenbein has stated, if iron be made the negative electrode of a battery containing from two to ten or more pairs of plates in